

REMARKS

Claim 1 has been amended to more clearly define the shape and position of the recessed portions. Specifically, Claim 1 has been amended to recite that the recessed portions are inwardly extended in a side direction of the device perpendicular to the upper surface of the substrate, and that the recessed portions have a semi-circular shape in cross section parallel to the upper surface of the substrate, wherein the depth of the recessed portion is a radius of the semi-circular shape in a direction parallel to the upper surface of the substrate, and the height of the recessed portion is at least 20 μm in the side direction of the device perpendicular to the upper surface of the surface of the substrate, and wherein a distance of 4 to 40 μm is maintained between the adjacent recessed portions. Support for amended Claim 1 can be found at, for example, Figs. 2 and 3, page 10, lines 34 to 36, page 11, lines 11 to 13 and Claim 5. Claim 5 has been canceled. Upon entry of this Amendment, which is respectfully requested, Claims 1-4, 7, 18 and 19 will be pending.

Statement of Substance of Interview

Applicants thank the Examiner for granting the telephone interview on November 17, 2009, wherein Applicants' representative presented a proposed amendment to Claim 1 in response to the § 112 rejection. Upon review, the Examiner indicated that the proposed amendment would not overcome the §112 rejection, for reasons of record.

In addition, the Examiner advised that the claim needs to recite the spatial orientation of the height and depth of the recessed portions. Further, the Examiner indicated that “perpendicular to the major surface of the substrate” is also indefinite because it is unclear what surface is the major surface. According to the Examiner, “if the substrate was to have a different

shape, (i.e., tall and thin) then the side of the substrate would become the major surface.” Thus, the Examiner considered that “major surface” required clarification. No agreement was reached.

Response to Claim Rejections Under § 112

Claims 1-7, 18 and 19 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

As noted, Claim 1 has been amended to define the shape and position of the recessed portions. Specifically, Claim 1 has been amended to recite that the recessed portions are inwardly extended in a side direction of the device perpendicular to the upper surface of the substrate, and that the recessed portions have a semi-circular shape in cross section parallel to the upper surface of the substrate, wherein the depth of the recessed portion is a radius of the semi-circular shape in a direction parallel to the upper surface of the substrate, and the height of the recessed portion is at least 20 µm in the side direction of the device perpendicular to the upper surface of the surface of the substrate, and wherein a distance of 4 to 40 µm is maintained between the adjacent recessed portions. Thus, claim 1, as amended, satisfies all of the requirements of § 112. Accordingly, withdrawal of the rejection is respectfully requested.

Response to Claim Rejections Under § 102

Claim 1, insofar as being in compliance with 35 U.S.C. § 112, is rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,843,280 to Lumbard et al.

Without commenting on the correctness of the rejection, Claim 1 has been amended to incorporate the subject matter of Claim 5, which is not part of the present rejection. Accordingly, withdrawal of the §102 rejection is respectfully requested.

Response to Claim Rejections Under § 103

Claims 1-7, 18 and 19, insofar as being in compliance with 35 U.S.C. § 112, are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,809,340 to Kato et al. Applicants respectfully traverse.

The present claims are directed to a compound semiconductor light-emitting device comprising: a substrate having an upper surface; a device side surface; and a light-emitting layer provided on the upper surface of said substrate, wherein at least a part of a substrate portion of the device side surface has recessed portions inwardly extended in a side direction of the device perpendicular to the upper surface of the substrate, and the recessed portions have a semi-circular shape in cross section parallel to the upper surface of the substrate. Further, the depth of the recessed portion is a radius of the semi-circular shape in a direction parallel to the upper surface of the substrate, and the height of the recessed portion is at least 20 μm in the side direction of the device perpendicular to the upper surface of the surface of the substrate, and wherein a distance of 4 to 40 μm is maintained between the adjacent recessed portions.

Kato discloses a light emitting element in which surface irregularities 109 are formed on at least a side surface of a light emitting region formed on a substrate. More particularly, Kato discloses that surface irregularities 109 are formed (i) as part of a process of exposing the n-type layers 103 (col. 9, lines 5-10 and Figs. 1 and 8); and (ii) during a process in which light emitting elements are separated from each other (col. 9, lines 34-40 and Fig. 6). Though Kato discloses, at col. 13, lines 24-25, that the irregular side surface 109 may have a depth reaching the substrate, Kato fails to disclose or suggest that at least a part of a substrate portion of the device side surface has recessed portions inwardly extended in a side direction of the device

perpendicular to the upper surface of the substrate, as presently claimed. Further, Kato fails to disclose or suggest that the height of the recessed portion is at least 20 µm in the side direction of the device perpendicular to the upper surface of the surface of the substrate.

The Examiner takes the position that layers 101, 102 and 103 combine to form a substrate, since the light-emitting layer 104 is formed thereon. Applicants respectfully disagree.

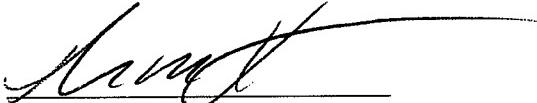
Kato discloses that the light emitting diode 100 comprises a sapphire substrate 101, a buffer layer 102, a plurality of n-type layers 103, a plurality of light emitting layers 104 which function as a light emitting region, a plurality of p-type layers 105, a light transmitting electrode (an anode) 106 formed atop the p-type layers, a pedestal electrode (an anode) 107 and an electrode (a cathode) 108 formed atop a portion of the n-type layers 103. *See*, col. 7, lines 24-31. One of ordinary skill in the art would not view the combination of layers 101 102 and 103 as a substrate based on Kato's disclosure.

Thus, Kato fails to render obvious the present claims. Accordingly, withdrawal of the rejection is respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Thomas M. Hunter
Registration No. 64,676

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: December 30, 2009